

Abstract

The epitaxial lateral overgrowth (ELOG) GaN obtains the dangling structure by using wet etching and the transferred substrate to separate from the GaN epitaxy layer by using stress concentration of thermal expansion coefficient of the transferred substrate. It is useful to separate of the GaN epitaxy layer and transferred substrate by using anneal of wafer bonding. The present invention is to provide high selective etching rate, no damage to epitaxial film, low cost, and feasibility for larger commercial sizes. The wet etching method can not damage the separated epitaxial substrate, thus the substrate can be reused. There are various choices of handling substrate for bonding, not limited by the epitaxial method. When the epitaxial film is applied in devices, the low defect density of the epitaxial film can enhance the lifetime and efficiency of the devices. The addition of this improved fabrication process does not require expensive equipment. Moreover, it will reduce the production cost. The epitaxy substrate is a recyclable substrate after separation of wet etching method and the transferred epitaxy layer obtain low defect density, lifetime improvement and low cost.